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AN IMPROVED TRAP FOR COLLECTING APHIDS

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The number of aphids in flight along an air front may be estimated from area samples taken as the insects pass a number of points. Aphids fly when the air is still or when the velocity of the wind is less than 4 miles per hour. Without a wind the flight is at random and the direction of the air front is unimportant. However, since aphids are carried by a wind, the most populous sampling area is in a plane perpendicular to the direction of the wind.

Shands, Simpson, and Lathrop (1) developed an aphid-collecting trap which is simple to operate and reasonably efficient in catching and retaining flying aphids. The improved trap described herein utilizes the same collecting and retaining principles of the Shands trap, but it is easier to make, responds more readily to changes in wind direction, and the solid construction of two of the sides causes a greater deflection of the air-borne aphids into the collection cap. In 1948 a Shands trap and one of the improved traps were operated side by side at Yakima, Wash., for 38 days. A total of 518 aphids were caught in the old trap and 1,264 in the improved trap. On each of 34 days more aphids were taken in the improved trap than in the old trap.

Description

The improved trap (fig. 1) has the same general upswing and diminishing shape from front to back as a curved horn. When in an operating position the large opening, or mouth, is vertical and the small opening is on a horizontal plane. Because of the curved shape of the trap the small opening is 5 inches above and 15 inches to the rear of the large opening. The openings are not shown in figure 1, but one side of the large opening may be seen at the extreme right of A and the small opening is in the block at the top of the trap.

1/ In cooperation with the Washington Agricultural Experiment Station.

The 1/4-inch thick, marine-plywood sides of the trap are 20 inches wide at the large end, and diminish in width to 2 1/2 inches at the small end. At the large end the sides are fastened together at top and bottom by 1- and 2-inch boards 20 inches long (not shown), thus forming a rectangular mouth of the trap 20 by 18 1/2 inches. One side of this mouth is at the extreme right of A. At the small end the sides are held together with a piece of plywood 3/4 inch thick and 4 1/2 inches square. In this plywood block is a 2-inch hole, over which is fastened an inverted metal screw band from a two-piece fruit-jar cap. This screw band holds a cotton scrim "baker's cap," as described by Shands (1), which keeps the aphids in the trap. The two sides of the trap not covered with plywood are enclosed with pieces of cotton scrim, drawn tight, tacked, and glued to the outside of the plywood sides, as is indicated by the gray stippled areas on the figure. No folds of cloth are present in which aphids might become trapped.

A frame of 1- by 2-inch boards supports the trap, and to this frame the wind vane is attached. The two vertical supports are 18 inches long, and one is bolted to each of the plywood sides of the trap 5 inches from the large opening. These supports extend 6 inches below the trap and are joined by two cross pieces placed 4 inches apart, the uppermost one touching the base of the trap. A 1/4- by 9-inch headless, spring-steel bolt extends through the center of each cross piece and is fastened by a nut above and below the top cross piece. The free end of the steel bolt is inserted into the fence-post assembly (B), upon which the trap rests.

A hole 3/8 inch in diameter and 4 1/2 inches deep is bored into the fence post from the top. A short length of copper tubing, closed at the bottom and containing a small steel ball bearing, is driven to the bottom of the hole. A roller-skate wheel is fastened to the top of the fence post directly over the hole. The skate wheel, or upper bearing, greatly increases the sensitivity of the trap and causes it to head into the slightest breeze.

The wind vane is made of 1- by 2-inch board 24 inches long, with a tin fin, 7 1/2 inches wide and 19 inches long, fastened at one end and bolted at the other end to the lower cross piece at a 90° angle. The wind vane is fastened slightly to one side of the long steel bolt.

Literature Cited

(1) Shands, W. A., Simpson, G. W., and Lathrop.
1942. An aphid trap. U. S. Bur. Ent. and Plant Quar. ET-196, 6 pp., illus. [Processed.]

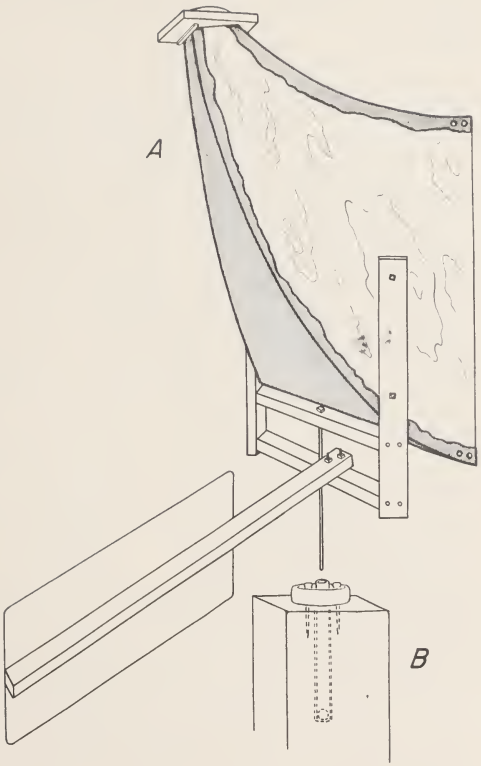

Figure 1.--An improved trap for collecting alate aphids: A, Three-quarters view of back and one side of the trap; B, fence-post assembly consisting of roller-skate wheel bearing, single ball bearing, and copper tubing.

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